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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/493,091	01/28/2000	Patrick Brindel	Q57709	1773
23373	7590	09/26/2006	EXAMINER	
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			LI, SHI K	
			ART UNIT	PAPER NUMBER
			2613	

DATE MAILED: 09/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/493,091

Applicant(s)

BRINDEL ET AL.

Examiner

Shi K. Li

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 June 2006 and 25 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 8 and 10 is/are allowed.
- 6) ☒ Claim(s) 1-7,9,11-17,19 and 20 is/are rejected.
- 7) ☒ Claim(s) 18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 27 June 2006 has been entered.

Allowable Subject Matter

2. The indicated allowability of claims 2-4, 7, 15-17 and 19 is withdrawn in view of the newly discovered reference(s) to Le et al. (U.S. Patent 7,054,559 B1. Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1, 3-6, 11-17 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Le et al. (U.S. Patent 7,054,559 B1) in view of Kosaka et al. (U.S. Patent 6,195,480 B1).

Regarding claim 1, Le et al. discloses in FIG. 1 a WDM fiber optic transmission system. FIG. 1 comprises WDM multiplexer 102 for generating signal from site A to site B, WDM demultiplexer 122 for receiving optical signal from site A, optical fiber 110 and optical line amplifier sites 105 and 115. Le et al. teaches in FIG. 2 to divide wavelength channels into red, blue, green and yellow bands and process each band with optical line amplifier 210-240. Le et al. teaches in col. 6, lines 33-35 that each optical line amplifier can include any type of optical

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amplifier, regenerator, or repeater. In particular, Le et al. teaches in FIG. 3 an example where the line amplifier includes a dispersion compensation module (DCM) for compensating distortion caused by dispersion. The difference between Le et al. and the claimed invention is that Le et al. does not teach an optical transmitter in site A and a receiver in site B. Even though such an arrangement is understood for one of ordinary skill in the art, the Examiner strengthens the argument by citing Kosaka et al. for teaching transmitting unit and receiving unit in a WDM transmission system. In particular, Kosaka et al. teaches in FIG. 1 transmitting unit 2 coupled to WDM multiplexer 12₁ and receiving unit 22 coupled to WDM demultiplexer 12₂. One of ordinary skill in the art would have been motivated to combine the teaching of Kosaka et al. with the WDM fiber optic transmission system of Le et al. because a transmitting unit generates optical signal that carries user information for delivery to a distance location and, therefore, realizes user-to-user communication over long distance. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to include transmitting unit for generating optical signal carrying user information and receiving unit for recovering user information from optical signal, as taught by Kosaka et al., in the WDM fiber optic transmission system of Le et al.

The modified WDM fiber optic transmission system includes a transmitter in site A, a receiver in site B, a optical fiber connecting the transmitter to receiver with two or more channel regenerators, e.g., 105 and 115 of FIG. 1 of Le et al. The regenerator for red wavelength band 210 in 105 and the regenerator for green wavelength band 230 in 115 form a set of regenerators. Each of them regenerates a non-overlapping subset of channels. Channel regenerators 105 and

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115 are positioned at a predetermined distance from each other and the red and green wavelength bands are from transmitter to receiver in a left-to-right direction.

Regarding claims 3 and 15-17, Le et al. teaches in col. 8, lines 55-56 that any number of channels and subwindows can be used. Therefore, it would have been obvious for one of ordinary skill in the art to use same number of subwindows as the number of channels.

Regarding claim 4, Le et al. teaches in FIG. 2 optical regenerator.

Regarding claim 5, Le et al. teaches in col. 8, lines 53-54 an example with four channels for each subwindow.

Regarding claim 6, Le et al. teaches in FIG. 3 dispersion compensation module for synchronizing the plurality of channels. Kosaka et al. also teaches in FIG. 12 dispersion compensation unit for synchronizing the channels.

Regarding claims 11-13, Kosaka et al. teaches in col. 13, lines 55-61 supervisory channel and control unit 59.

Regarding claim 14, Le et al. teaches in col. 6, lines 33-35 that an optical line amplifier site can include any type of optical amplifier, regenerator or repeater. Thus, it is obvious that an amplifier site includes amplifier and optionally regenerator. That is, the spacing of said optical regenerators is a multiple of the spacing of said optical amplifiers where the multiplier may be 1 or greater.

Regarding claim 19, it is obvious to divide the channels in a WDM signal into more than 4 subwindows. For example, in a system with 8 subwindows, there are 4 subwindows in each direction and a set of channel regenerators would comprise a first channel regenerator and a plurality of other channel regenerators.

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Regarding claim 20, channels in the red wavelength band would be regenerated by 210 of FIG. 2 of Le et al. and channels in the green wavelength band would be regenerated by 230 of FIG. 2 of Le et al.

5. Claims 2 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Le et al. and Kosaka et al. as applied to claims 1, 3-6, 11-17 and 19-20 above, and further in view of Yano (U.S. Patent 6,108,125).

Le et al. and Kosaka et al. have been discussed above in regard to claims 1, 3-6, 11-17 and 19-20. The difference between Le et al. and Kosaka et al. and the claimed invention is that Le et al. and Kosaka et al. do not teach retiming. However, Le et al. teaches in col. 6, lines 33-35 that each optical line amplifier can include any type of optical amplifier, regenerator or repeater. Thus, one of ordinary skill in the art would have been motivated to include a regenerator in the optical line amplifier site as suggested by Le et al. For example, Yano teaches in col. 1, lines 22-35 that the function of a regeneration repeater includes reshaping, retiming and amplification. Yano teaches in FIG. 6 and FIG. 7 an optical regenerative repeater. One of ordinary skill in the art would have been motivated to combine the teaching of Yano with the modified WDM fiber optic transmission system of Le et al. and Kosaka et al based on the suggestion of Le et al. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a regenerative repeater with reshaping, retiming and amplification functions, as taught by Yano, in the modified WDM fiber optic transmission system of Le et al. and Kosaka et al based on the suggestion of Le et al.

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6. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Le et al. and Kosaka et al. as applied to claims 1, 3-6, 11-17 and 19-20 above, and further in view of Okuno et al. (U.S. Patent 6,480,312 B1).

Le et al. and Kosaka et al. have been discussed above in regard to claims 1, 3-6, 11-17 and 19-20. The difference between Le et al. and Kosaka et al. is that Le et al. and Kosaka et al. do not teach the details of the demultiplexer 202 and multiplexer 262. Okuno et al. teaches in FIG. 1A circulator 51 for extracting channels and coupler 21 for inserting channels. One of ordinary skill in the art would have been motivated to combine the teaching of Okuno et al. with the modified fiber optical transmission system of Le et al. and Kosaka et al. because the approach of Okuno et al. is simple and cost effective. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a circulator for extracting channels and a coupler for inserting channels, as taught by Okuno et al., in the modified fiber optical transmission system of Le et al. and Kosaka et al. because the approach of Okuno et al. is simple and cost effective.

Allowable Subject Matter

7. Claims 8 and 10 are allowed.

8. Claim 18 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

9. Applicant's arguments with respect to claims 1-7,9,11-17 and 19-20 have been considered but are moot in view of the new ground(s) of rejection.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shi K. Li whose telephone number is 571 272-3031. The examiner can normally be reached on Monday-Friday (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

skl
19 September 2006



Shi K. Li
Patent Examiner